# CITY COUNCIL UPDATE ON THE PLANNING STUDY FOR THE SOUTH LINDEN AVENUE AND SCOTT STREET CALTRAIN GRADE SEPARATION PROJECT

City Council Study Session
August 20, 2020

**Public Works Department**

# PROJECT DEVELOPMENT TEAM

- City of San Bruno
- City of South San Francisco
- Caltrain
- Consultants
  - AECOM (Lead Technical)
  - APEX (Public Outreach)
  - CDM Smith (Traffic)

# AGENDA

- Objectives
- Background
- Project Alternatives
  - Railroad Tracks
  - Pedestrian / Bicycle Crossing at Scott Street
- Community Feedback
- Staff Recommendation
- Answer Questions
- Receive Direction

# OBJECTIVES

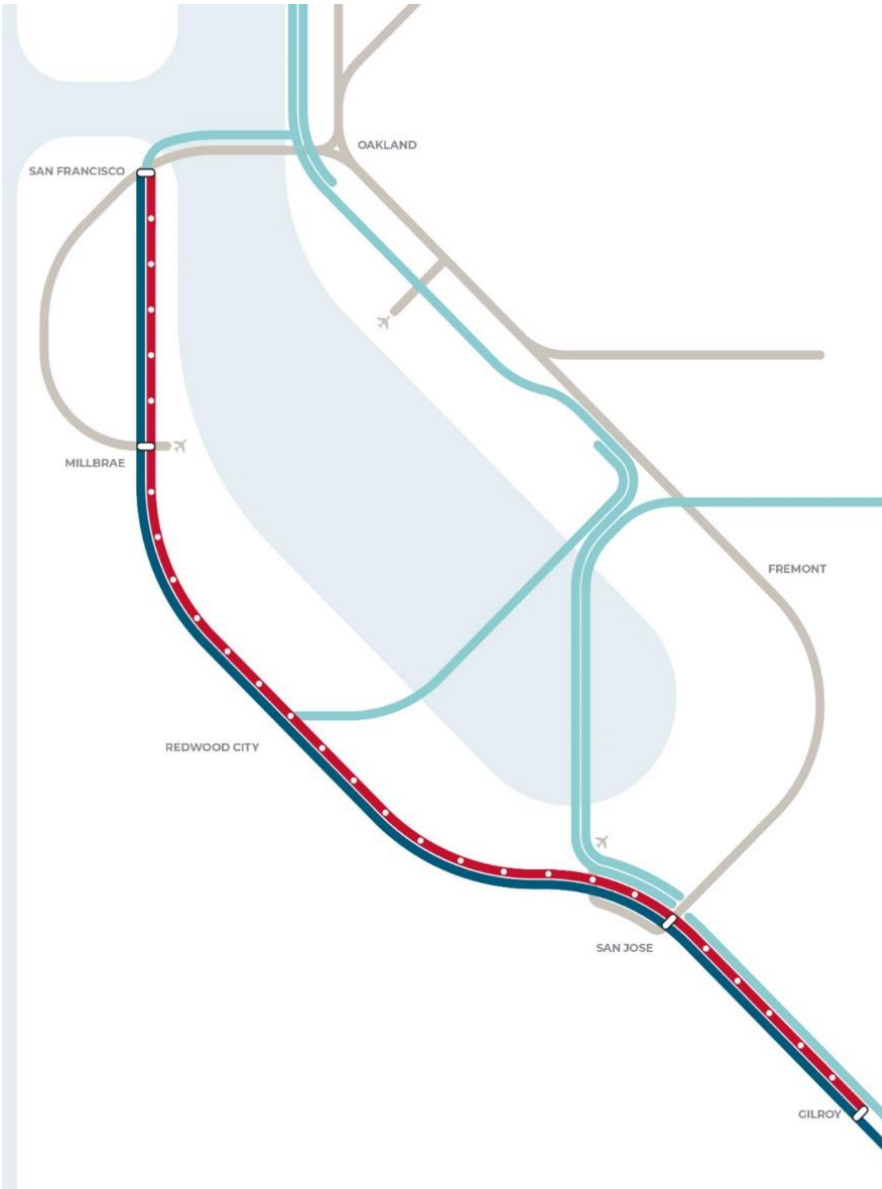
- Provide Update to the City Council
- Provide Staff Recommendation
- Receive Direction from the City Council
  - Preferred alternative for train tracks
  - Preferred pedestrian/bicycle crossing at Scott Street

# WORK DONE TO DATE

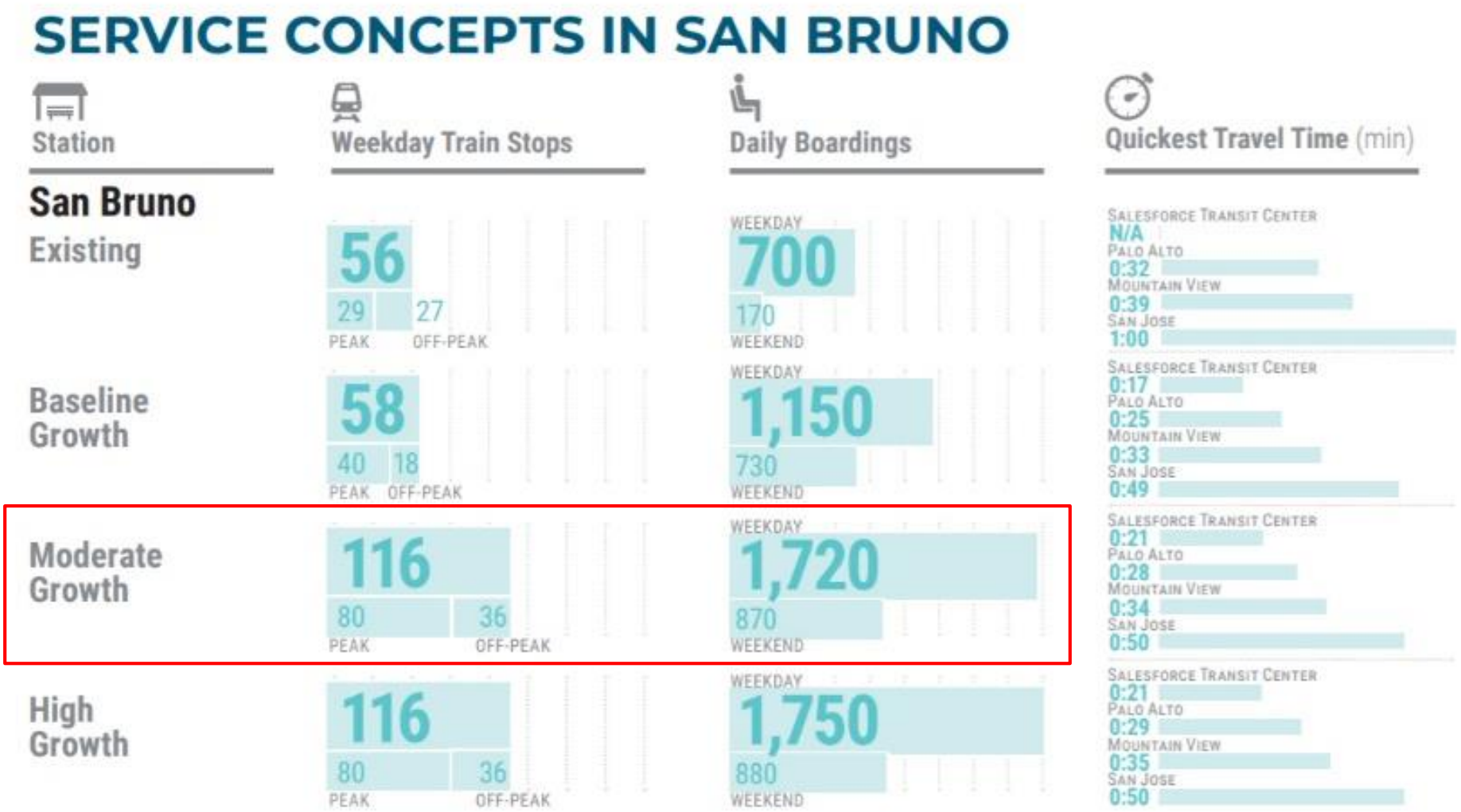
- August 2018: SSF & San Bruno Community Meeting #1 (four alternatives)
- June/September 2018: Council Updates
- August 2019: San Bruno Only Community Meeting #2
- November 2019: San Bruno City Council Update (ped/bike crossing only at Scott St preferred)
- January 2019: SSF City Council Update
- June 2020: SSF & San Bruno Community Meeting #3 (virtual)
- August 2020: San Bruno City Council Update (preferred alternative)

# CALTRAIN CORRIDOR: CURRENT PLANNING EFFORTS RELEVANT TO SAN BRUNO

- **Caltrain Business Plan Effort**
- **City-Led Grade Separation Efforts**
- **California High Speed Rail Project**

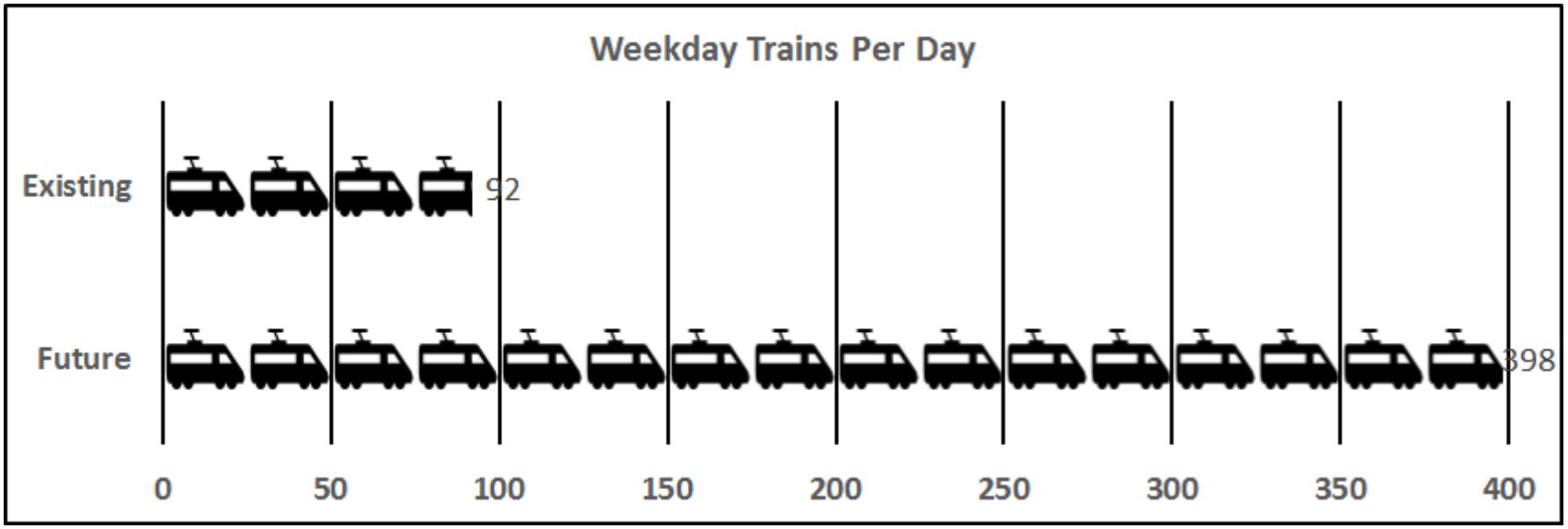


# CALTRAIN BUSINESS PLAN EFFORT



# CALTRAIN BUSINESS PLAN EFFORT

**Long Range Service Vision (Adopted Moderate Growth Scenario): Weekday Trains Per Day**

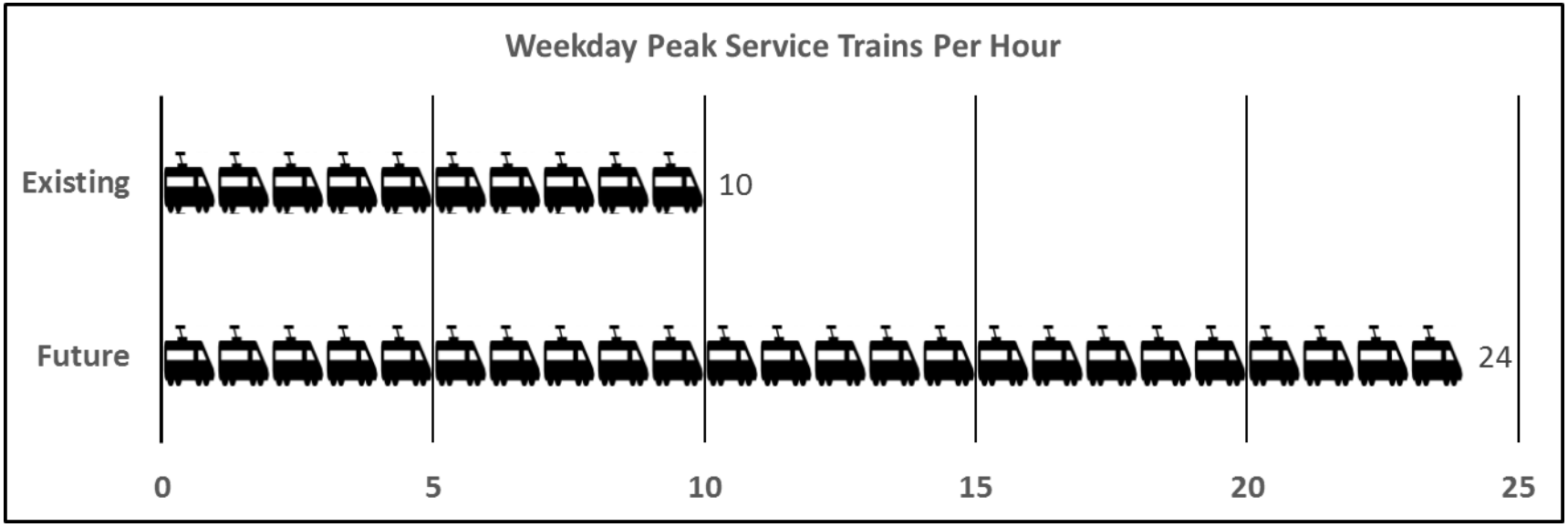



**Potential Higher Growth Level of Service: Weekday Trains Per Day**

- Could go as high as **478**.

# CALTRAIN BUSINESS PLAN EFFORT

## Long Range Service Vision (Adopted Moderate Growth Scenario): Number of Weekday Trains at "Peak" Hours

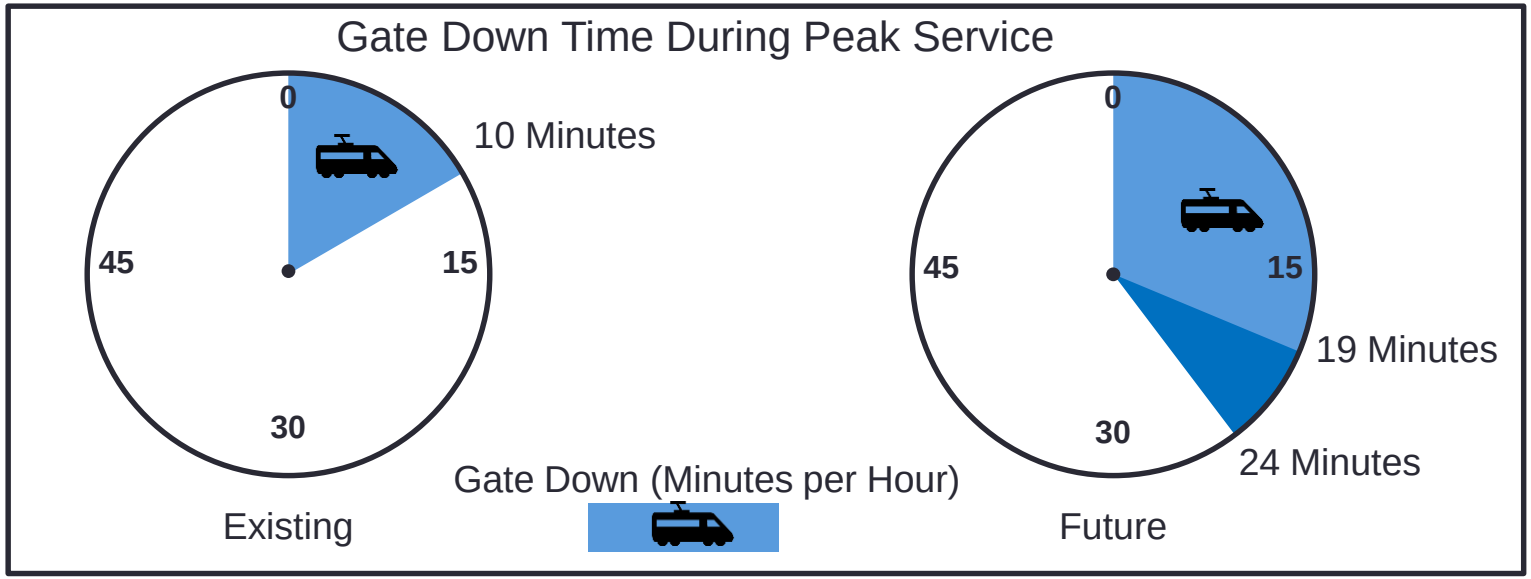



## Potential Higher Growth Level of Service

- Could go as high as **32 trains/peak hour**.

# CALTRAIN BUSINESS PLAN EFFORT

## Long Range Service Vision (Adopted Moderate Growth Scenario): Gate Down Times at Peak Hours



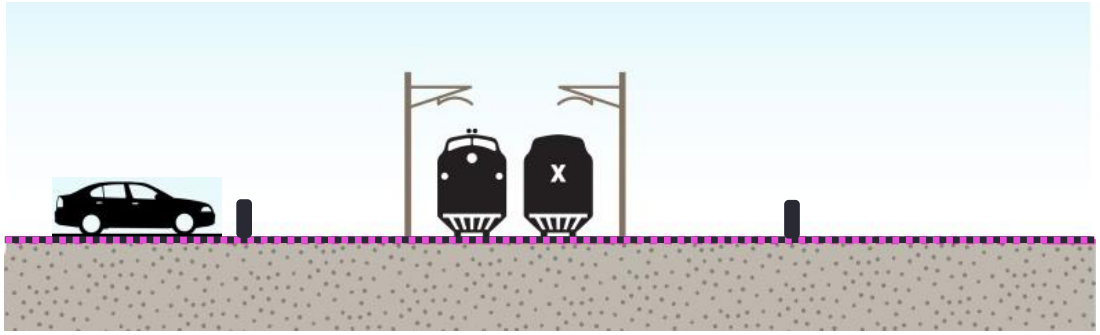

**Gate Down Times During Peak Service Hours:**

| | |
|---|---|
| Existing | 10 minutes each hour |
| Moderate Growth* | 19 minutes each hour |
| High Growth* | 24 minutes each hour |

**Trains will be passing through San Bruno every few minutes.**

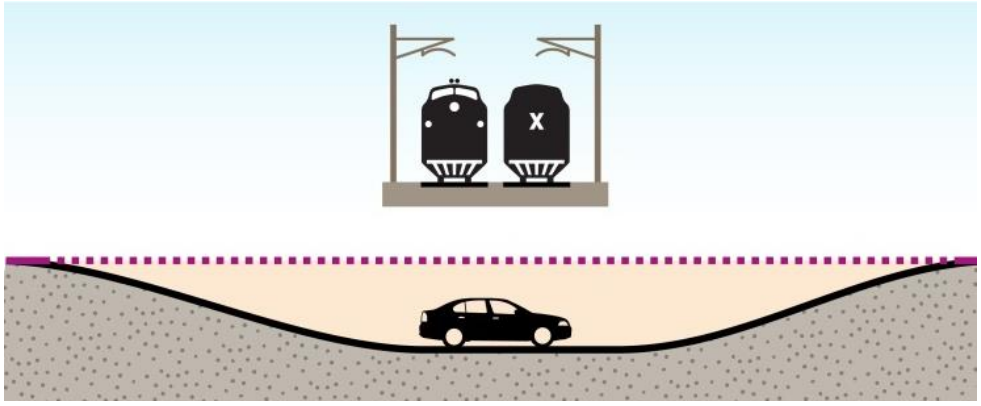
# AT- GRADE

- Road and tracks intersect at different elevations



# GRADE SEPARATION

- Road and tracks intersect at different elevations



# WHY BUILD A GRADE SEPARATION?

To protect the City of San Bruno, its residents, and its neighborhoods from the impact of more trains.

- Safety
- Congestion
- Noise

# THREE OPTIONS AT SCOTT STREET

~~A: No grade separation at Scott Street~~

B: Scott Street grade separated for pedestrians and bicycles but closed to motor vehicles

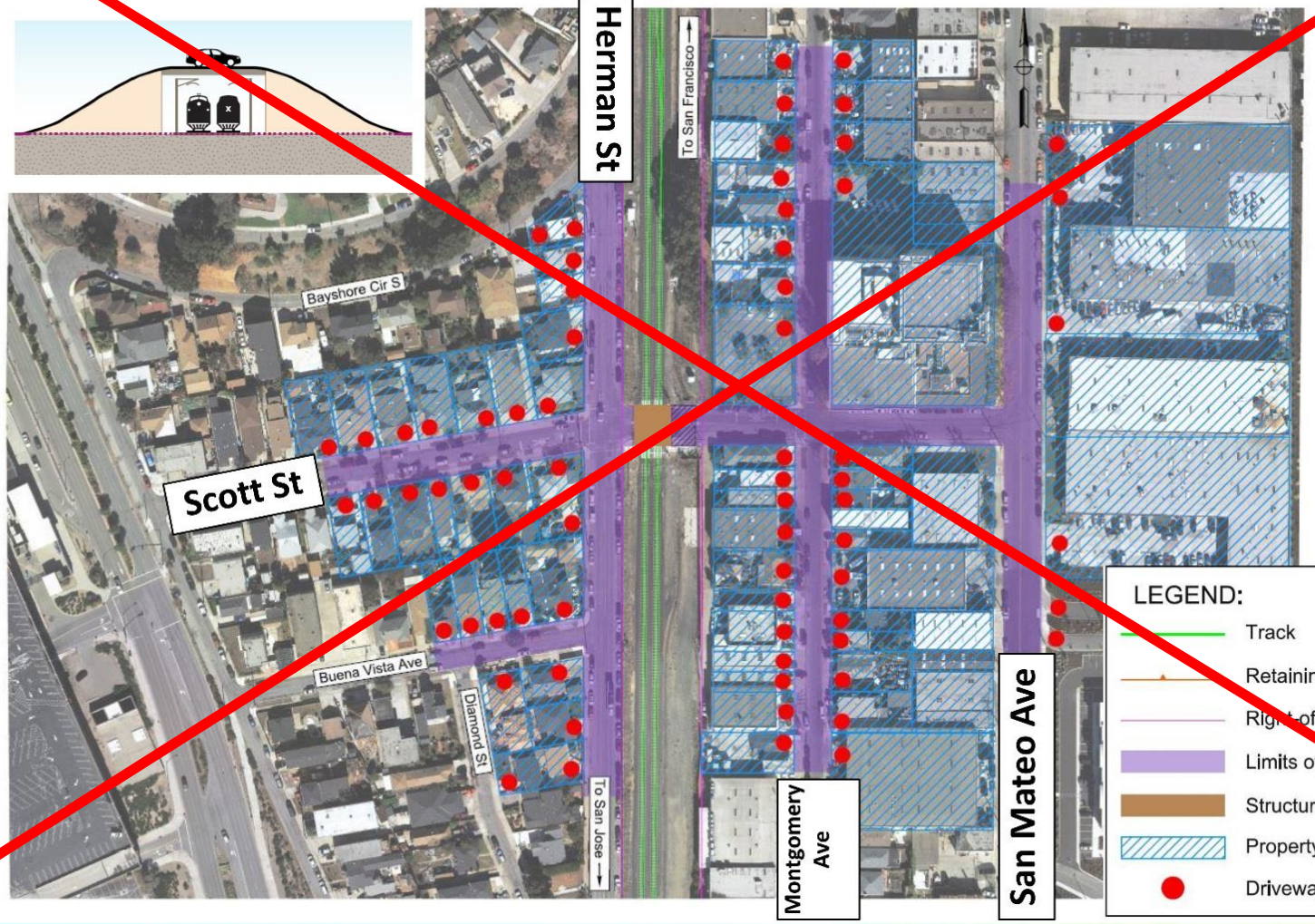
~~C: Scott Street grade separated for pedestrians, bicycles, and motor vehicles (property impacts)~~

# PROPERTY IMPACTS – WORST CASE

## Option C-4: Rail at grade with Roadway Overpass

### Scott Street Grade Separated for Vehicles, Pedestrians, Bikes

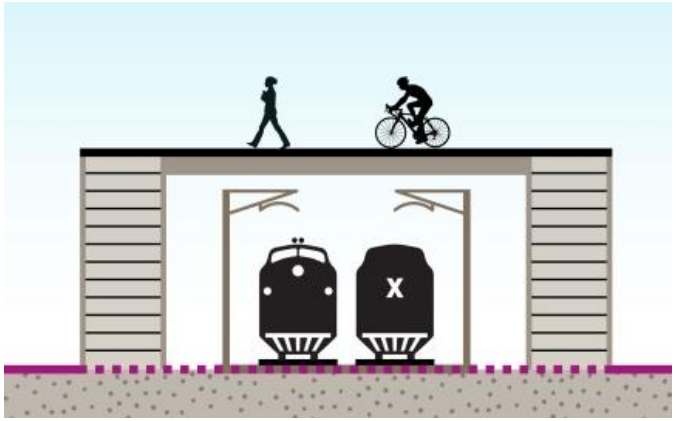


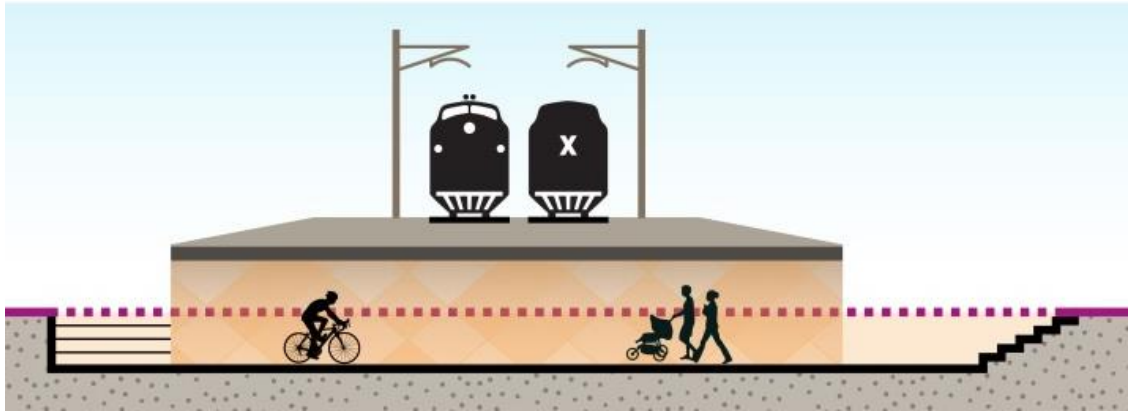


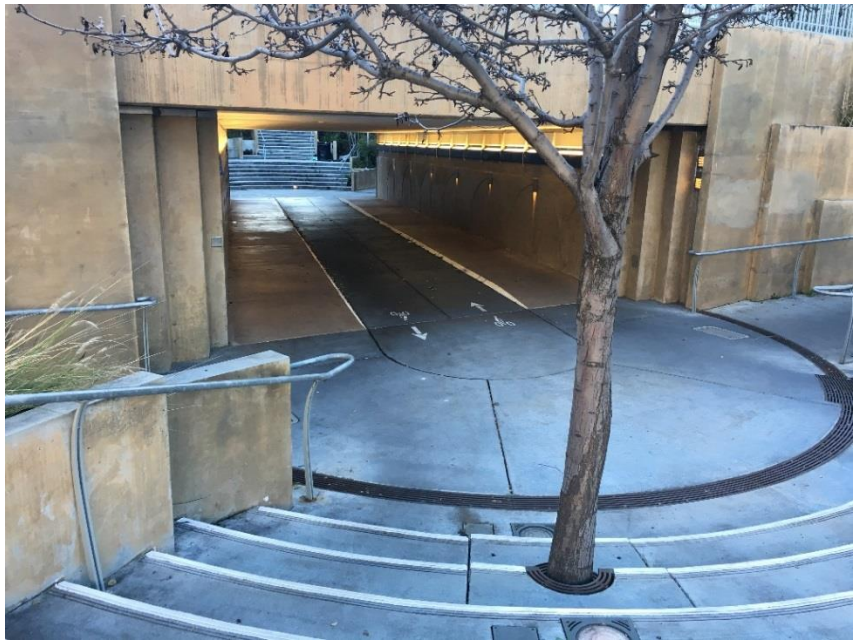

69 Impacted Driveways

# SELECTED PLAN

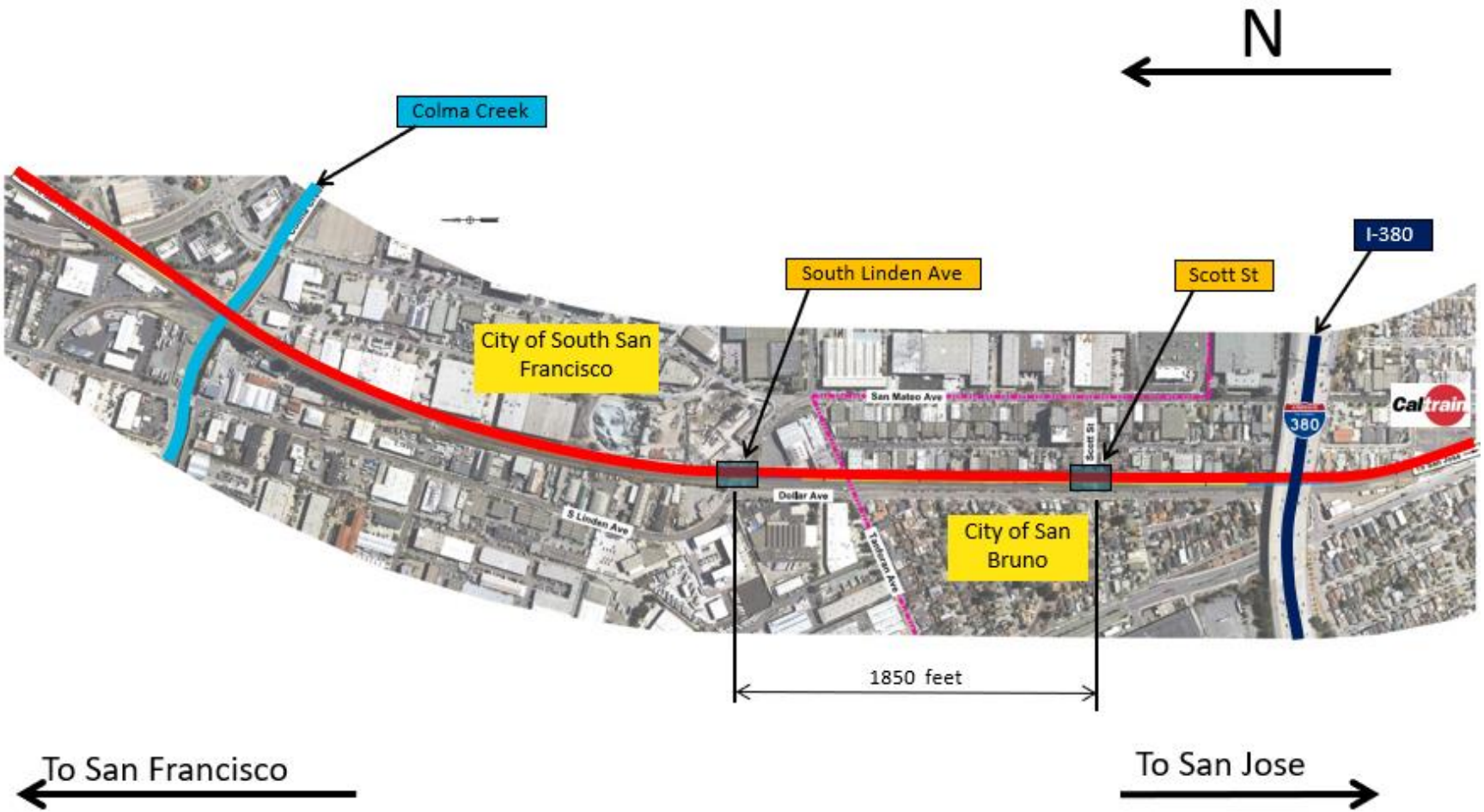
Grade separation for pedestrians and bicycles but closed to motor vehicles





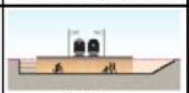
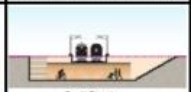
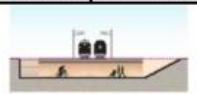
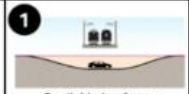


# PROJECT LOCATION MAP



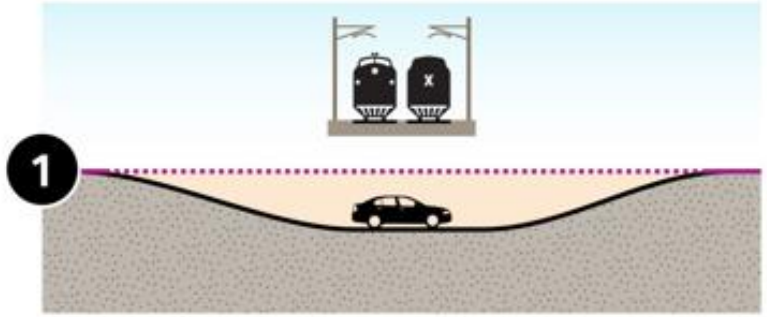
# SUMMARY OF ALTERNATIVES

**SUMMARY TABLE OF EIGHT GRADE SEPARATION ALTERNATIVES AT SCOTT STREET**
**SOUTH LINDEN AVENUE AND SCOTT STREET GRADE SEPARATION PLANNING STUDY PROJECT**
**City of San Bruno, City Council Meeting on August 25, 2020**

| | SCOTT STREET PED/BIKE OVERCROSSING | | | | SCOTT STREET PED/BIKE UNDERCROSSING | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Railroad Tracks Alternatives 1-4** | **Alternative 1: Rail Partially Elevated** | **Alternative 2: Rail Partially Lowered** | **Alternative 3: Rail Remains At-Grade** | **Alternative 4: Rail Remains At-Grade** | **Railroad Tracks Alternatives 5-8** | **Alternative 5: Rail Partially Elevated** | **Alternative 6: Rail Partially Lowered** | **Alternative 7: Rail Remains At-Grade** | **Alternative 8: Rail Remains At-Grade** |
| **Scott Street Concept** |   (tracks raised 2.5 ft) |   (tracks lowered 6 ft) |   | | **Scott Street Concept** |   (tracks raised 2.5 ft) |   (tracks lowered 6 ft) |   | |
| **Elevation of Structure Elevation at Eye Level (5.5 ft tall person)** | 33.5 feet above grade<br>38.5 feet above grade | 25 feet above grade<br>30 feet above grade | 31 feet above grade<br>36 feet above grade | | **Floor Elevation of Undercrossing** | 14 feet below grade | 22.5 below grade | 16.5 feet below grade | |
| **Related So. Linden Concept** | 1   | 2   | 3   | 4   | **Related So. Linden Concept** | 1   | 2   | 3   | 4   |
| **Scott Street Rendering** |  | | | | **Scott Street Rendering** |  | | | |
| **Advantages of Overcrossing** | - Easier to construct than an undercrossing<br>- Less disruption to railroad operations during construction<br>- Potentially Less costly<br>- Community expressed preference for overcrossing due to concerns around undercrossings | | | | **Advantages of Undercrossing** | - Easier for pedestrians to cross (shorter ramps)<br>- Low visual impact | | | |
| **Disadvantages of Overcrossing** | - More difficult to cross (longer ramps)<br>- Greater visual impact overall | | | | **Disadvantages of Undercrossing** | - More difficult to construct than an overcrossing<br>- Greater impact to railroad operations during construction<br>- Potentially more costly<br>- More maintenance for stormwater | | | |
| **Staff Comments** | Alternative for railroad track preferred but overcrossing expected to have substantial visual impacts. | Not recommended, tracks at San Bruno are lowered by 6 ft at a significant cost, for a minor benefit in overcrossing height. | Not recommended, similar to Alternatives 1 and 5, but with more property impacts at So. Linden Ave | Not recommended, similar to Alternatives 1 and 5, but with more property impacts at So. Linden Ave | **Staff Comments** | **Staff Recommended Alternative** with Ped/Bike Undercrossing due to shortest crossing distance and low visual impact above ground | Not recommended; undercrossing deep | Not recommended, similar to Alternatives 1 and 5, but with more property impacts at So. Linden Ave | Not recommended, similar to Alternatives 1 and 5, but with more property impacts at So. Linden Ave |

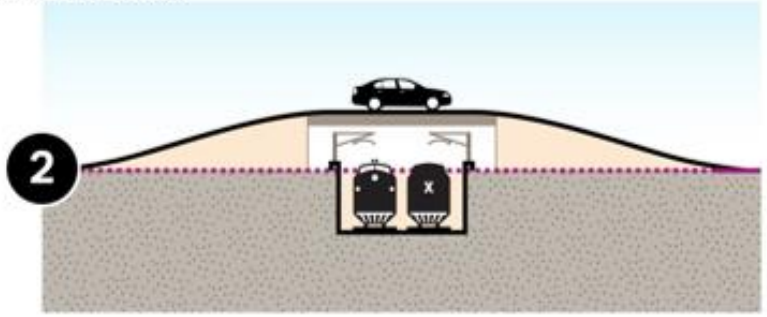
# FOUR ALTERNATIVES FOR TRAIN TRACKS SOUTH LINDEN AVE (SSF)

**Alternative 1: Hybrid (Track Raised, Linden Ave Lowered)**



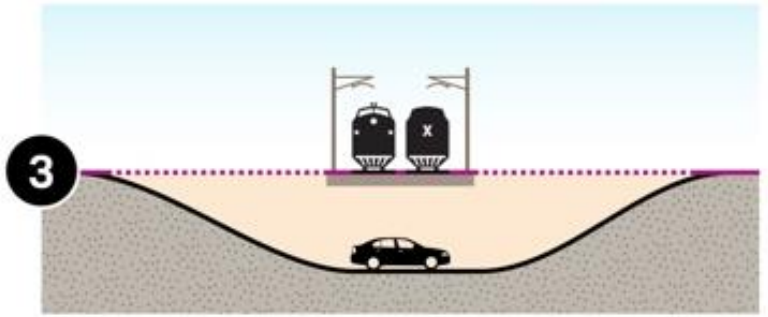

**South Linden Avenue**
Rail Partially Elevated/Roadway Partially Lowered

**Alternative 2: Hybrid (Track Lowered, Linden Ave Raised)**



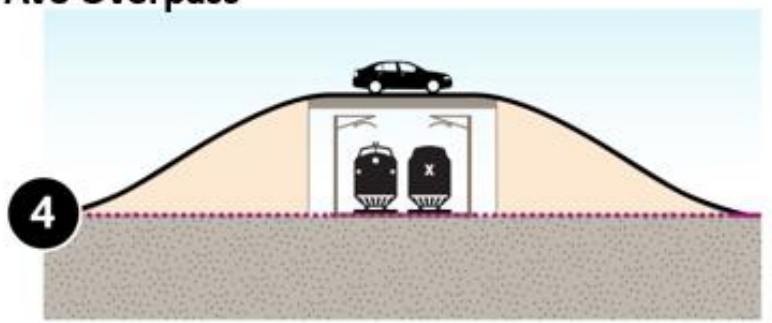

**South Linden Avenue**
Rail Partially Lowered/Roadway Partially Elevated

**Alternative 3: Rail at grade with Linden Ave Underpass**




**South Linden Avenue**
Rail at-grade, Roadway Lowered

**Alternative 4: Rail at grade with Linden Ave Overpass**




**South Linden Avenue**
Rail at-grade, Roadway Elevated

# THREE ALTERNATIVES FOR TRACKS AT SCOTT STREET

- Tracks raised (2.5 feet) – Alternatives 1 and 5
- Tracks lowered (6 feet) – Alternatives 2 and 6
- Tracks stay at current elevation – Alternatives 3, 4, 7, and 8
  - Treated as one alternative for San Bruno

# PEDESTRIAN / BICYCLE OVERCROSSING SCOTT STREET (SAN BRUNO)

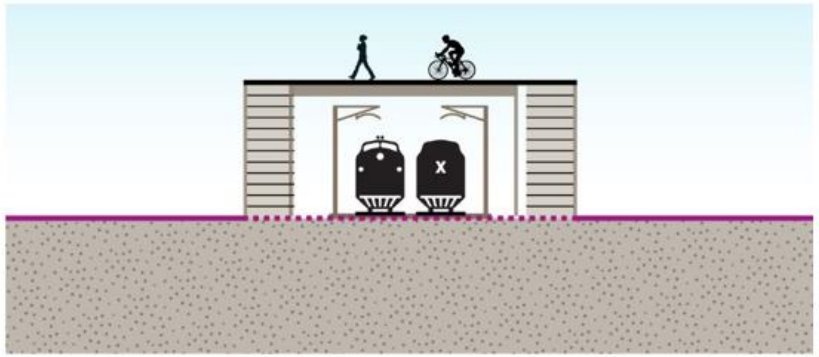
**Alternative 1: Hybrid (Track Raised, Linden Ave Lowered)**

**Scott Street**
Rail Partially Elevated with a Ped/Bike Overcrossing

**Alternative 2: Hybrid (Track Lowered, Linden Ave Raised)**

**Scott Street**
Rail Partially Lowered with a Ped/Bike Overcrossing

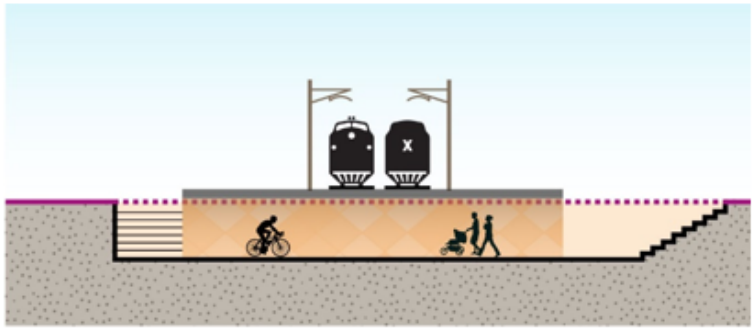
**Alternatives 3 and 4: Rail at grade with Linden Ave Underpass or Overpass**



**Scott Street**
Rail at-grade with a Ped/Bike Overcrossing

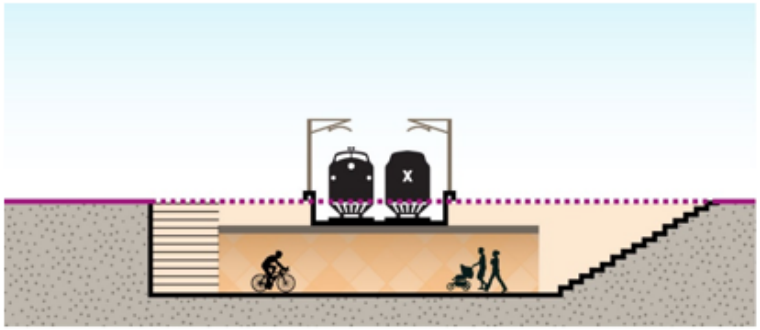
# PEDESTRIAN / BICYCLE UNDERCROSSING SCOTT STREET (SAN BRUNO)

**Alternative 5: Hybrid (Track Raised, Linden Ave Lowered)**



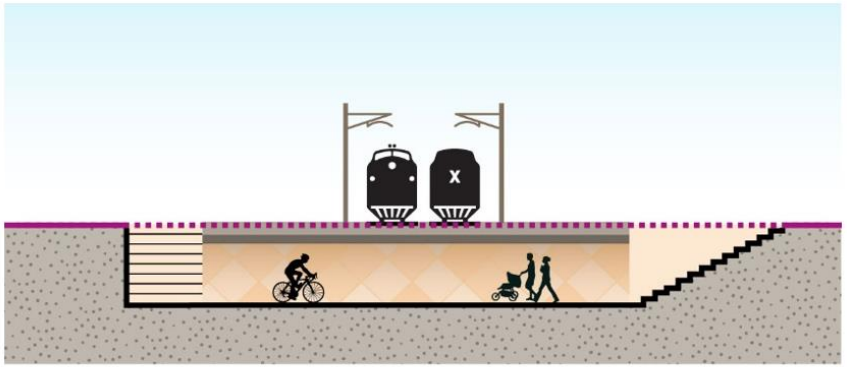
**Scott Street**
Rail Partially Elevated with a Ped/Bike Undercrossing

**Alternative 6: Hybrid (Track Lowered, Linden Ave Raised)**



**Scott Street**
Rail Partially Lowered with a Ped/Bike Undercrossing

**Alternative 7 and 8: Rail at grade with Linden Ave Underpass**



**Scott Street**
Rail at-grade with a Ped/Bike Undercrossing

# EXAMPLE OF PED/BIKE OVERCROSSING

Blossom Hill Road, San Jose

# EXAMPLE OF PED/BIKE OVERCROSSING

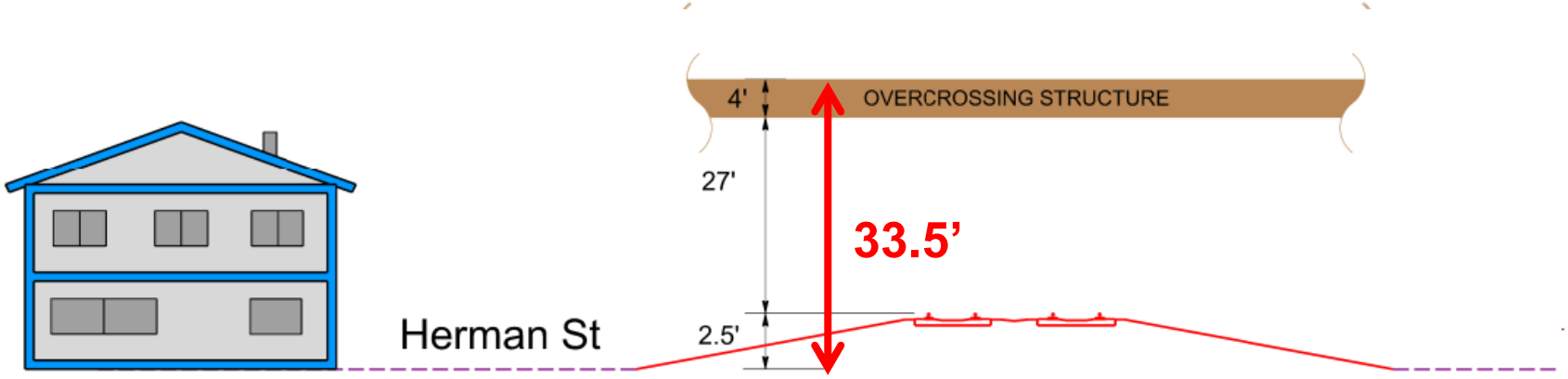
Market Street Overpass, San Francisco

# EXAMPLE OF PED/BIKE UNDERCROSSING

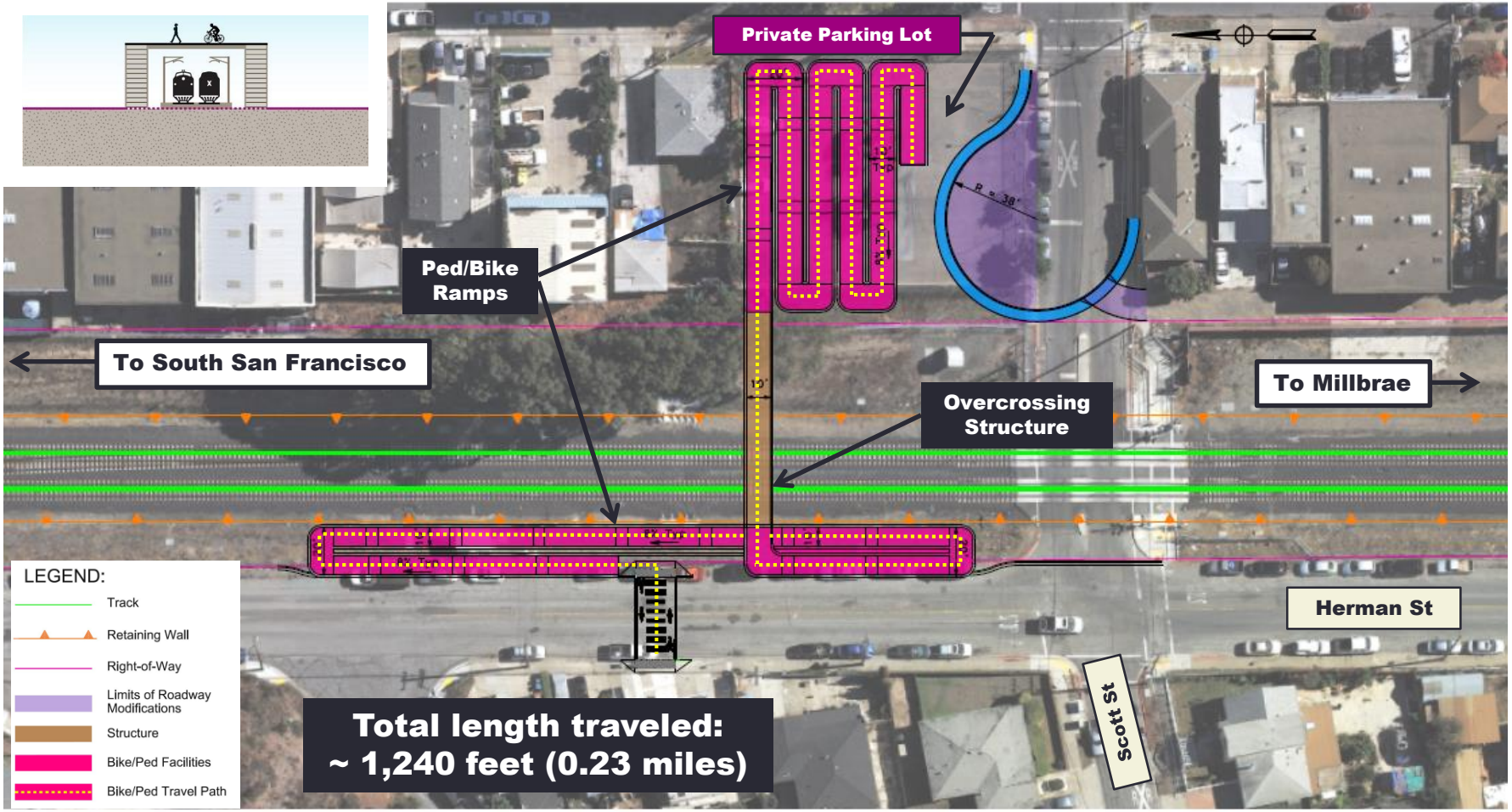

Homer Avenue, Palo Alto

# ALTERNATIVE 1: TRACK RAISED
# Scott St Typical Section – Overcrossing

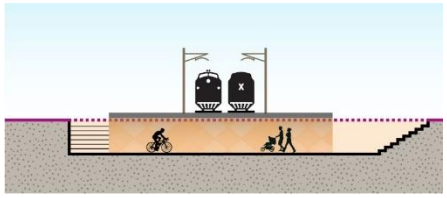
| | |
|---|---|
| Top of Rail Elevation Increase | 2.5 ft |
| Vertical Clearance | 27 ft |
| Structure Depth | 4 ft |
| **Total Elevation Climb from Herman St** | **33.5 ft** |



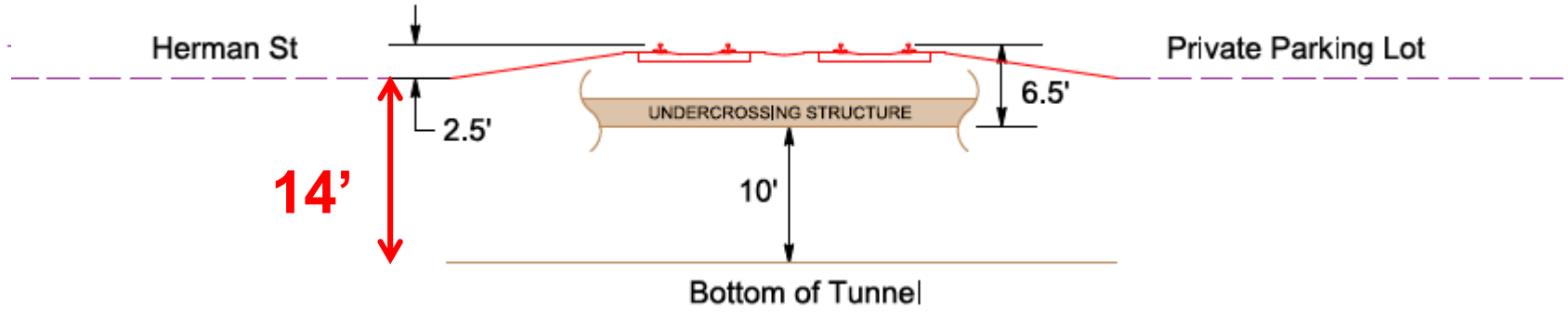
# ALTERNATIVE 1: TRACK RAISED
# Scott St Layout – Overcrossing



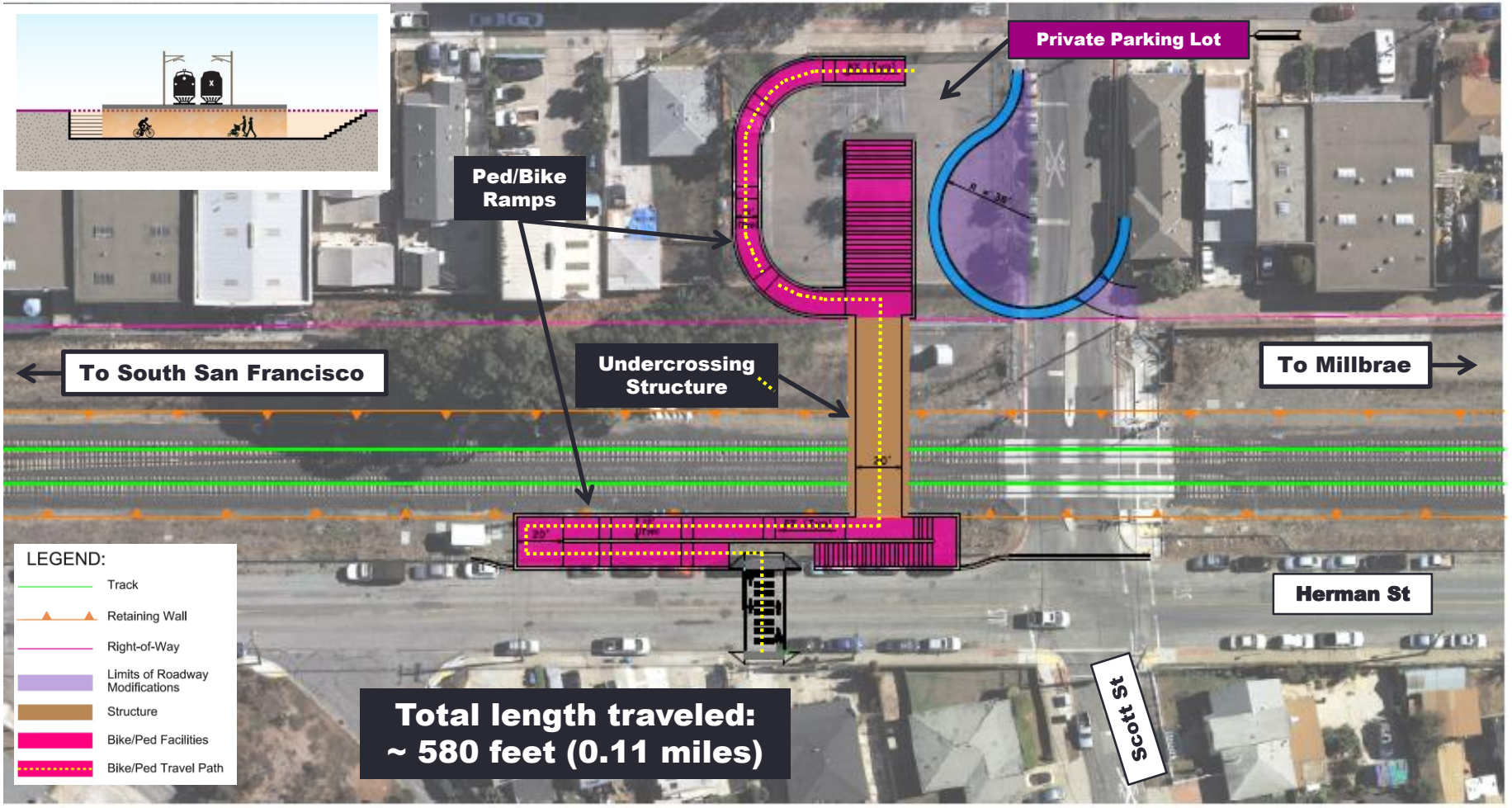
# ALTERNATIVE 5: TRACK RAISED
# Scott St Typical Section - Undercrossing



| | |
|---|---|
| Top of Rail Elevation Increase | 2.5 ft |
| Vertical Clearance | 10 ft |
| Clearance from roof of structure to T/R | 6.5 ft |
| **Total Elevation Descent from Herman St** | **14 ft** |

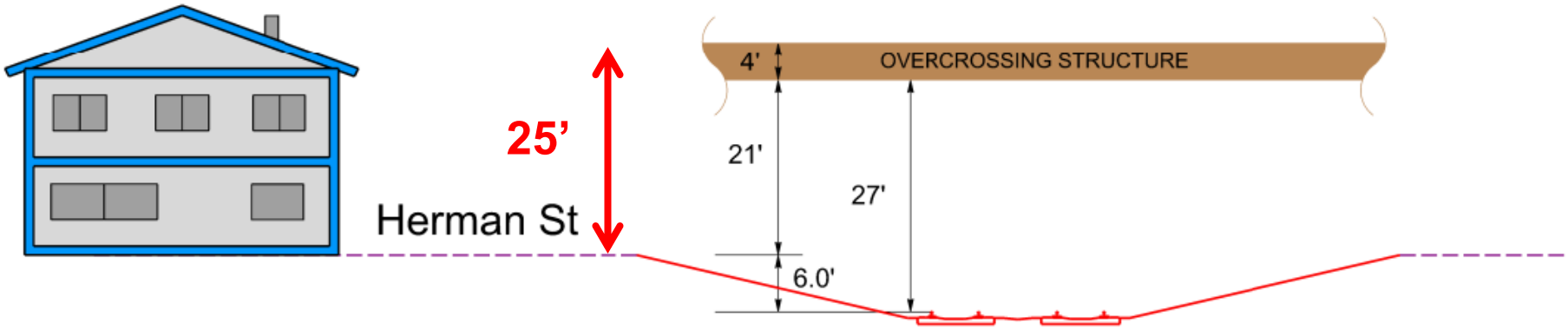


# ALTERNATIVE 5: TRACK RAISED
# Scott St Layout – Undercrossing

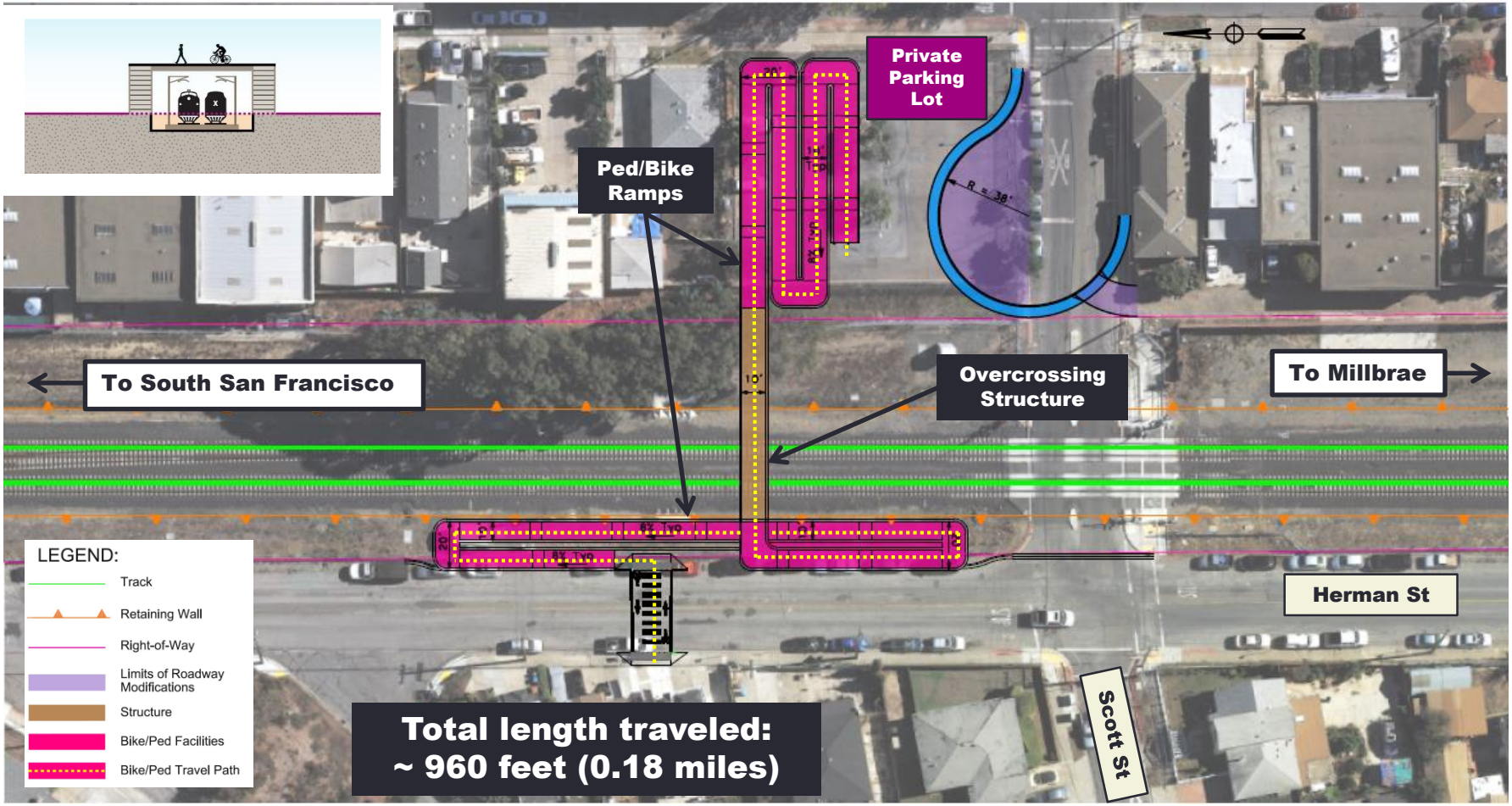


# ALTERNATIVE 2: TRACK LOWERED
# Scott St Typical Section – Overcrossing

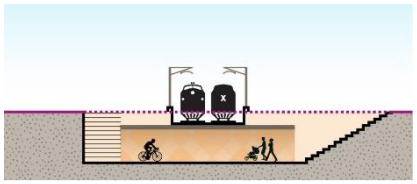
| | |
|---|---|
| Top of Rail Elevation Lowered | -6 ft |
| Vertical Clearance | 27 ft |
| Structure Depth | 4 ft |
| **Total Elevation Climb from Herman St** | **25 ft** |



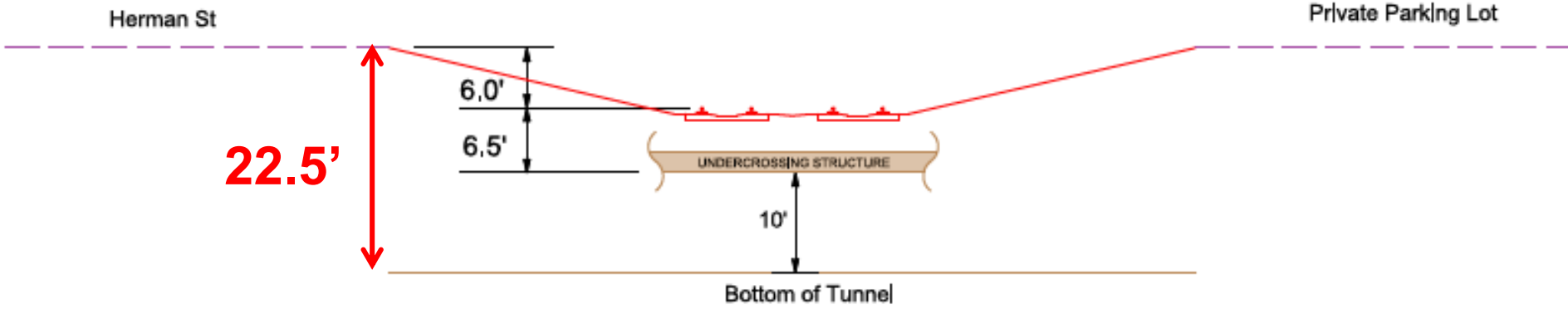
# ALTERNATIVE 2: TRACK LOWERED
## Scott St Layout – Overcrossing



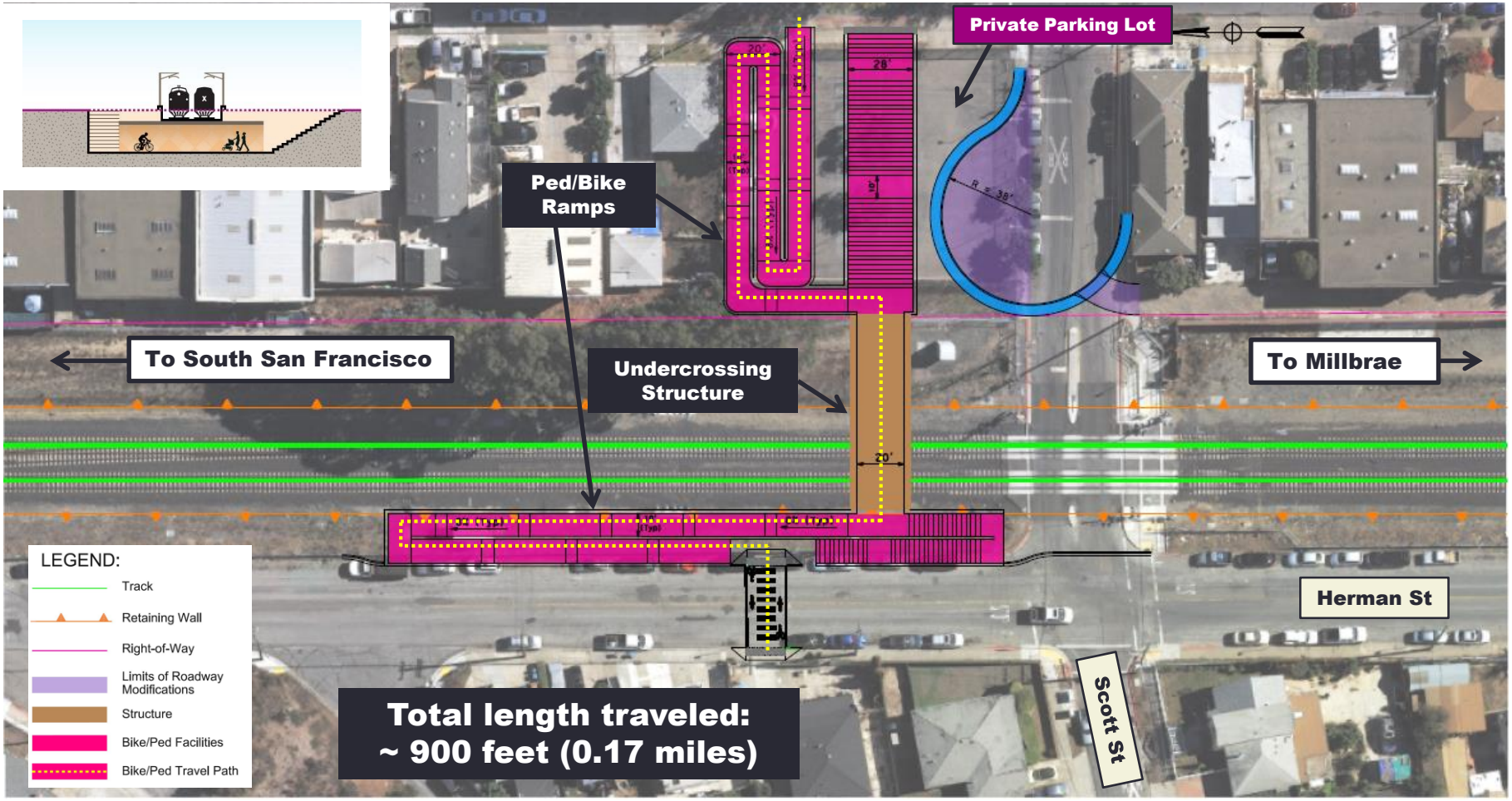
# ALTERNATIVE 6 – TRACK LOWERED
# Scott St Typical Section – Undercrossing



| | |
|---|---|
| Top of Rail Elevation Lowered | 6 ft |
| Vertical Clearance | 10 ft |
| Clearance from roof of structure to T/R | 6.5 ft |
| **Total Elevation Descent from Herman St** | **22.5 ft** |



# ALTERNATIVE 6 – TRACK LOWERED
## Scott St Layout – Undercrossing



# FEEDBACK FROM COMMUNITY MEETING #3

- Disliked a pedestrian/bicycle undercrossing due to concerns
  - Homeless encampments
  - Reduced visibility of ped/bicyclists using an undercrossing
  - Stormwater flooding issues
- Desired to keep the at-grade crossing with no grade separation
- Asked whether a pedestrian/bicycle crossing was needed at all
- Terminus of the crossing should be moved north to align with an intersection or moved completely to Tanforan Avenue
- Requested confirmation that residential properties would not be taken or surrounding properties lowered or raised as a result of the railroad construction
- Desired soundwalls with a pedestrian/bicycle overcrossing

# DECISIONS TO BE MADE

- Railroad Track
  - 3 Alternatives for Scott Street
    - Raised, lowered, or keep at current grade
- Pedestrian/Bicycle Crossing
  - Overcrossing vs Undercrossing

# THREE POSSIBILE TRACK ELEVATIONS

- Tracks raised 2.5 ft – Alternatives 1 & 5
- Tracks lowered 6 ft – Alternatives 2 & 6
- Tracks stay at grade – Alternatives 3,4,7, & 8
  - Similar elevation as Alternatives 1 and 5
- Context of South San Francisco
  - Property Impacts – every alternative has property impacts in SSF with Alternatives 1 & 5 having the least, increasing with alternatives to most with Alternatives 4 & 8
- Project Costs
  - Alternatives 1 & 5 have least expected total costs
  - Alternatives 2, 3, 6, & 7 have higher expected total costs
  - Alternative 4 & 8 have the highest expected total costs

# CONCEPTUAL RENDERINGS

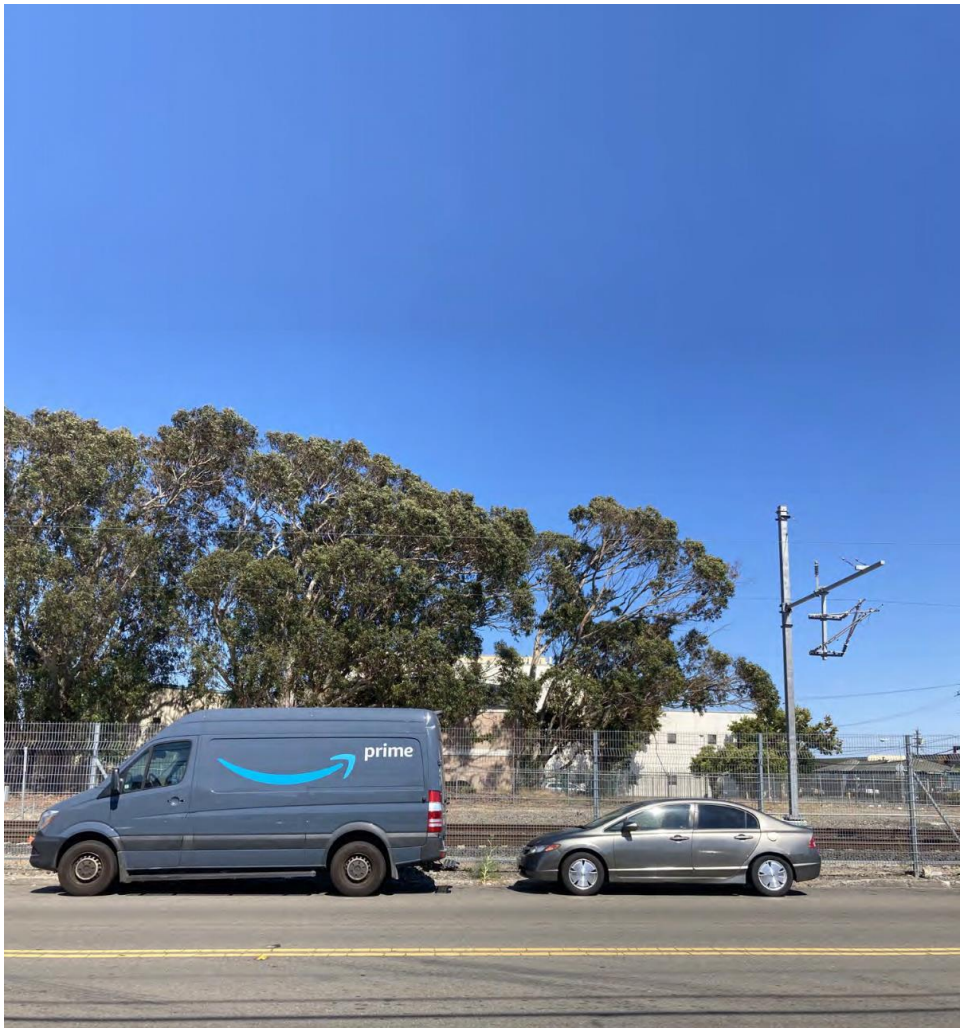
- On Herman Street looking north at Scott Street
- On Herman Street looking east toward tracks at crossing
- On Herman Street near Bayshore Circle looking south

# CURRENT CONDITION

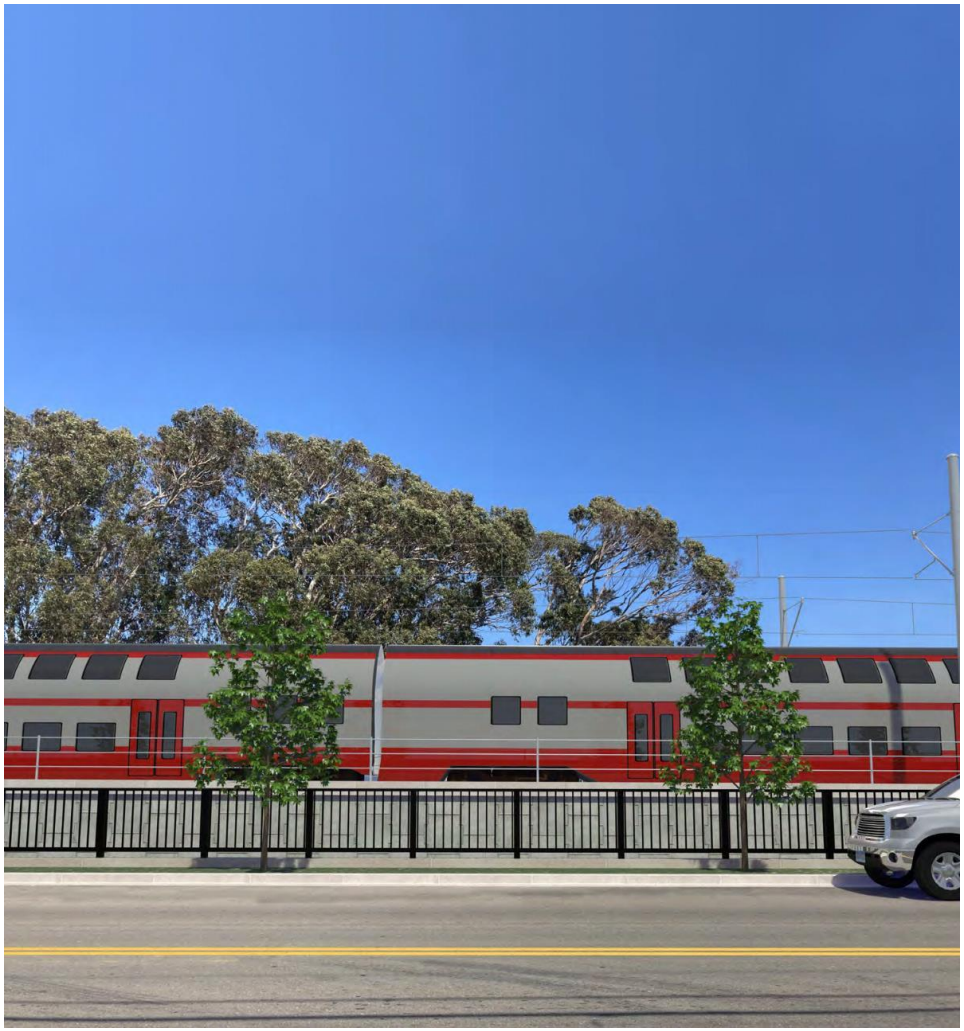
# PED/BIKE UNDERCROSSING

# PED/BIKE OVERCROSSING

# CURRENT CONDITION



# PED/BIKE UNDERCROSSING



# PED/BIKE OVERCROSSING

# CURRENT CONDITIONS

# PED/BIKE UNDERCROSSING

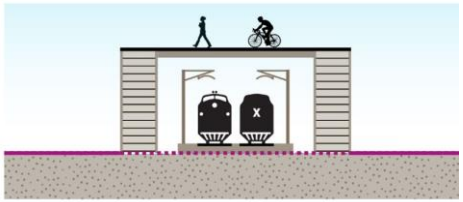
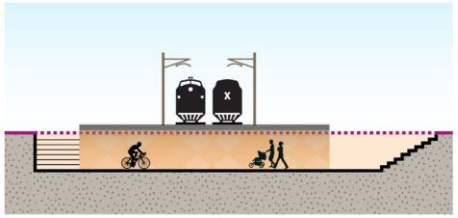
# PED/BIKE OVERCROSSING

# DESIGN CONSIDERATIONS

- Vertical clearance requirement
  - Over a freeway = 18.5 feet
  - Over the tracks = 27 feet

- 2.5 foot rise every 30 feet (8.33%) with 5-foot landings

# ADVANTAGES AND DISADVANTAGES OF PED/BIKE CROSSING OPTIONS

| Ped/Bike Crossing | Advantages | Disadvantages |
|---|---|---|
|  OVERCROSSING | ▪ Easier to construct than an undercrossing<br>▪ Less disruption to railroad operations during construction<br>▪ Potentially less costly | ▪ More difficult to cross (longer ramps)<br>▪ Greater visual impact overall |
|  UNDERCROSSING | ▪ Easier for pedestrians to cross (shorter ramps)<br>▪ Low visual impact | ▪ More difficult to construct than an overcrossing<br>▪ Greater impact to railroad operations during construction<br>▪ Potentially more costly |

# STAFF RECOMMENDATION

- Recommend Alternative 5
  - Railroad tracks are partially raised
  - Pedestrian/bicycle undercrossing

# NEXT STEPS

- Prepare conceptual designs, cost estimate, and renderings of preferred alternative
- Complete Project Study Report
- Seek funding for next phases
  - Currently, numerous City-led grade separation projects underway and at various stages of development.
  - Cities currently compete with each other for limited funding and priority.

# QUESTIONS?


Scott Street in San Bruno

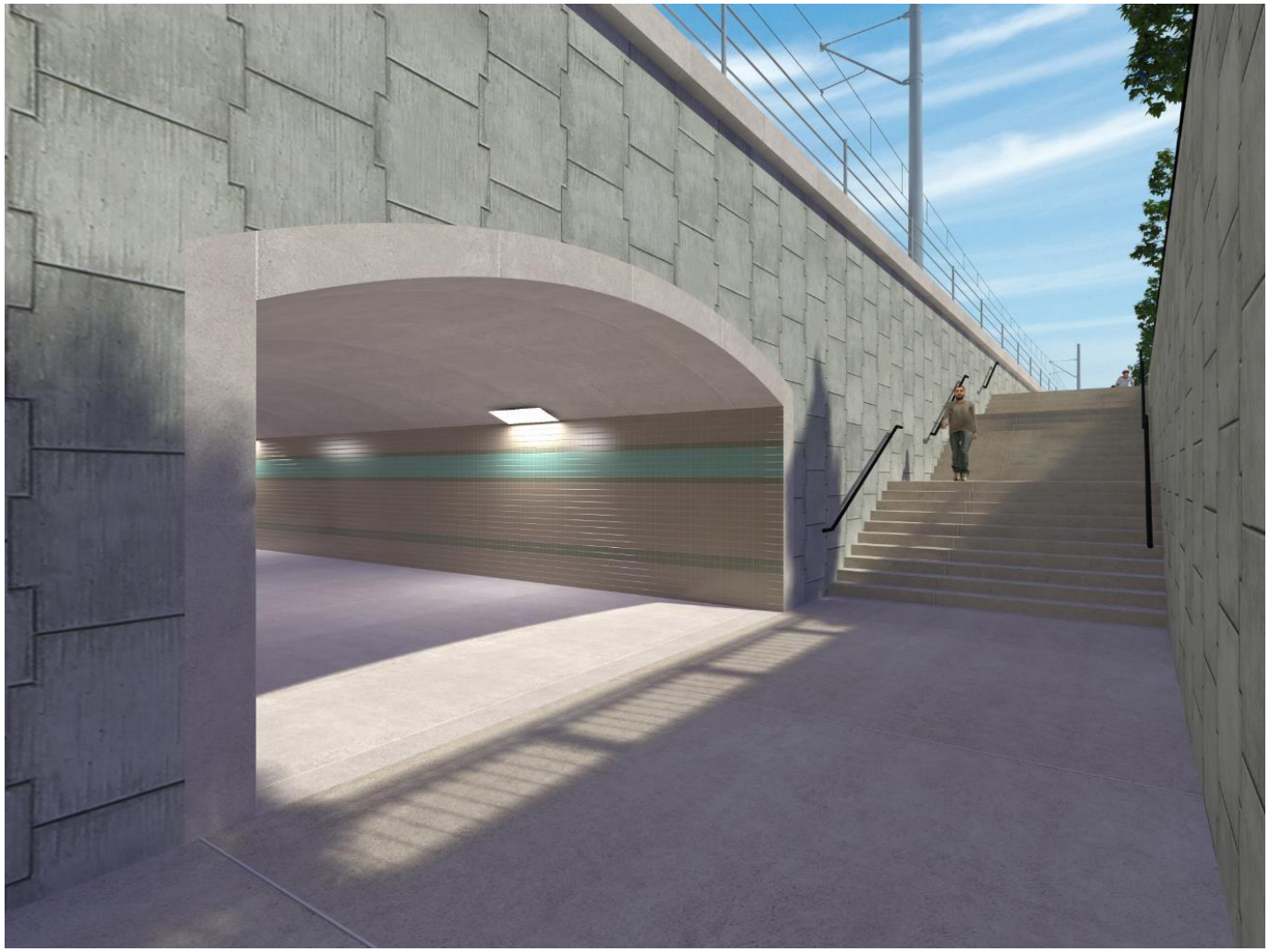
# THANK YOU!


Scott Street in San Bruno

# PED/BIKE UNDERCROSSING

# PED/BIKE UNDERCROSSING

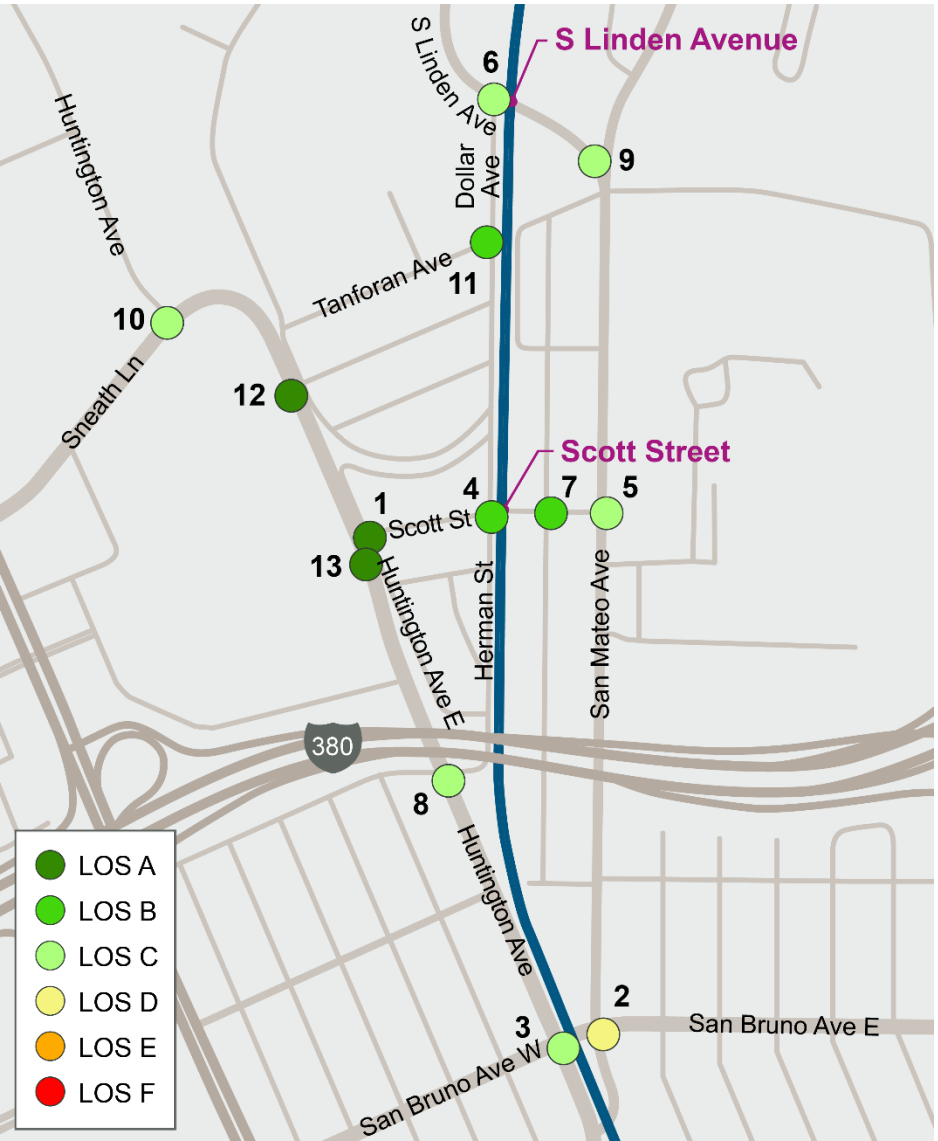
# PED/BIKE UNDERCROSSING



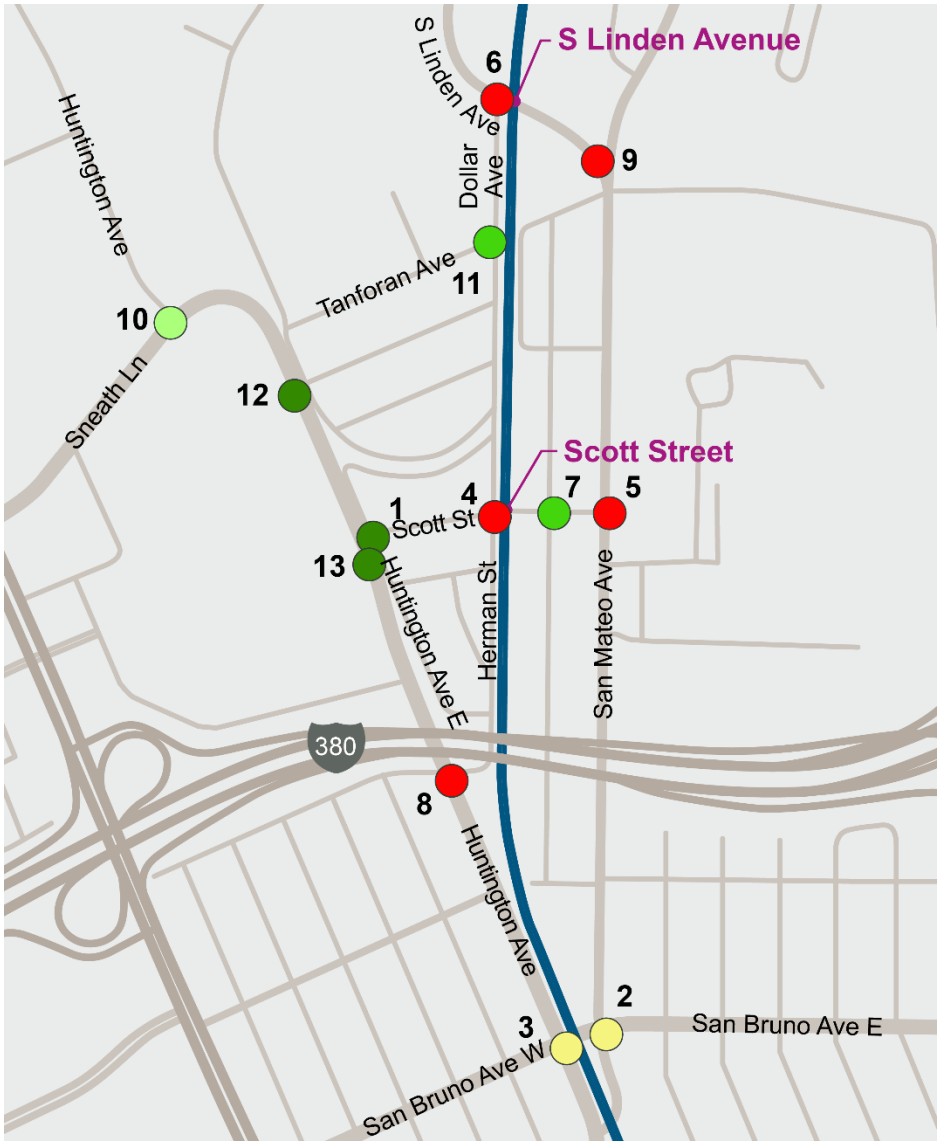
# PED/BIKE OVERCROSSING

# LOS – EXISTING ROADWAY NETWORK (AM PEAK)

## Existing Volume

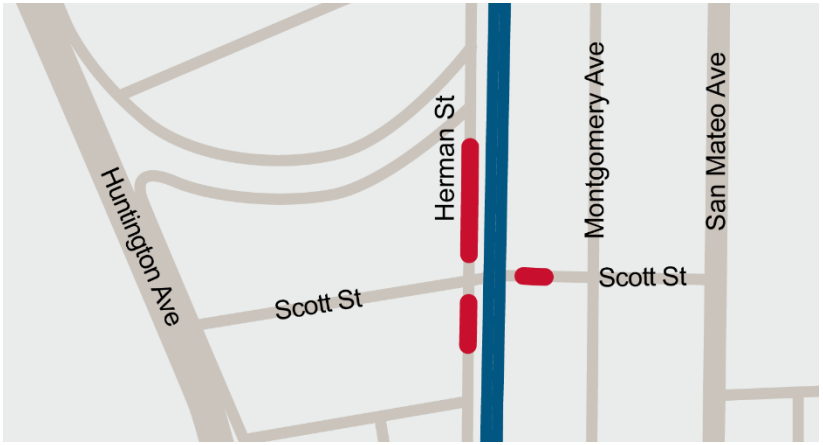



## Option A
## 2045 Volume – Moderate Growth



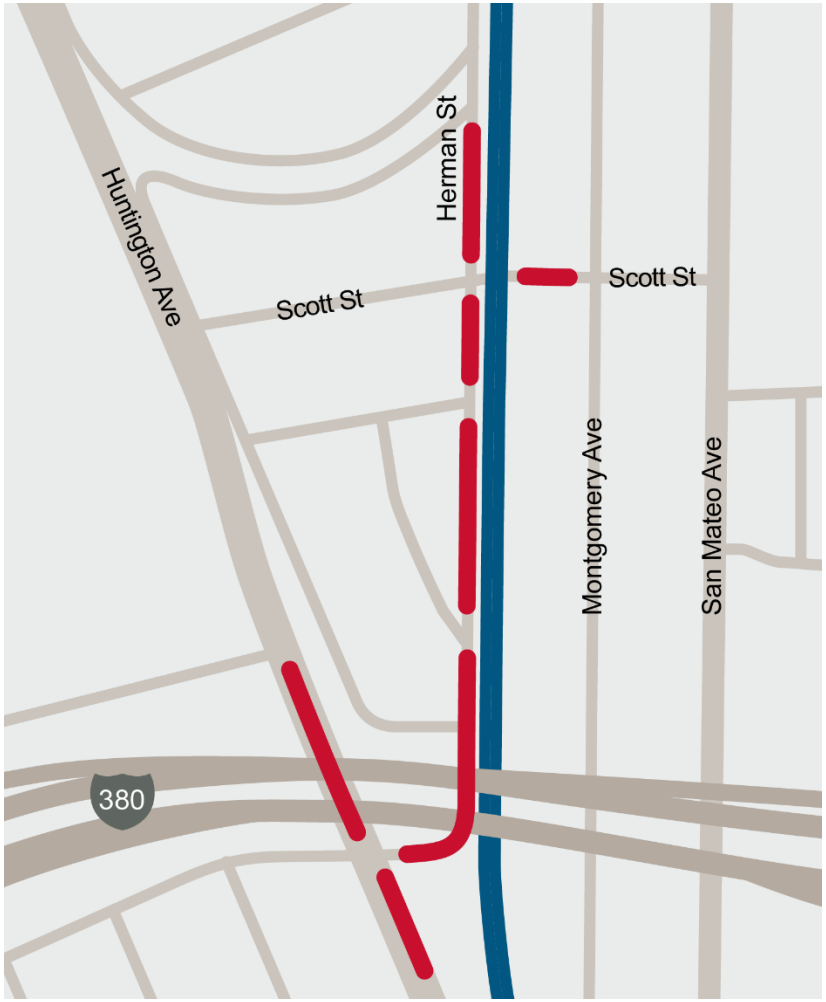
# QUEUES – EXISTING ROADWAY NETWORK (AM PEAK)
# SCOTT STREET

## Existing Volume




Source: Consultant Team's SimTraffic Analysis.

## 2045 Volume – Moderate Growth

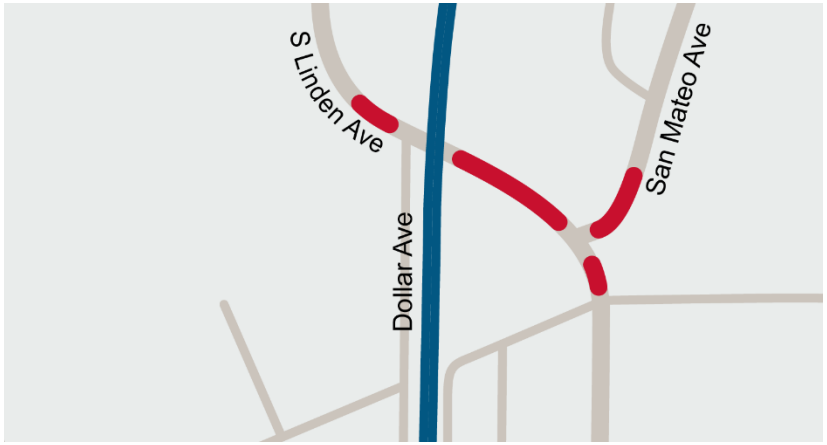



Source: Consultant Team's SimTraffic Analysis.

Queue
Caltrain

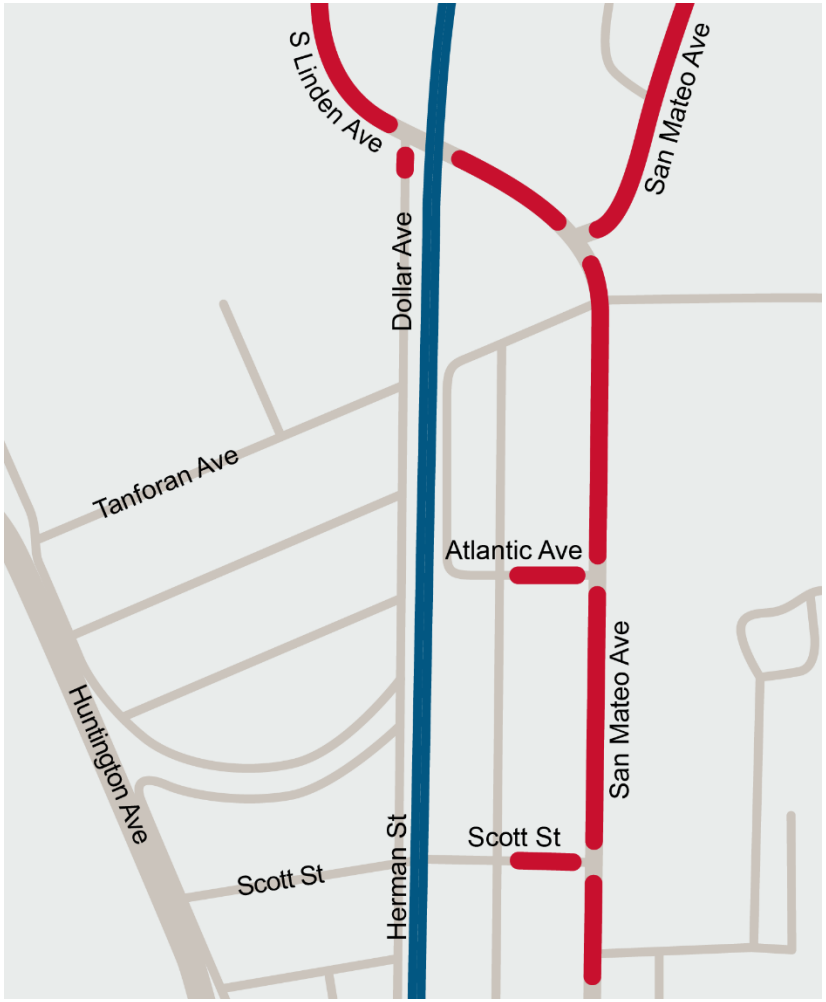
# QUEUES – EXISTING ROADWAY NETWORK (PM PEAK)
# S. LINDEN AVENUE

## Existing Volume




Source: Consultant Team's SimTraffic Analysis.

## 2045 Volume – Moderate Growth




Source: Consultant Team's SimTraffic Analysis.

Queue
Caltrain